

User Manual

Temperature Chamber
TK-105 CKLT

SAMPLE



Kambič

WARRANTY

Kambic d.o.o. guarantees that the product delivered has been thoroughly tested to ensure that it meets its published specifications. The warranty is valid only if the product has been installed and used in accordance to the instructions supplied by Kambic d.o.o.

Kambic d.o.o. shall in no event be liable for incidental or consequential damages, including without limitations, lost profits, loss of income, loss of business opportunities, loss of use, and other related exposures, caused by incorrect use of product.

Warranty is valid for **13 months** from date of shipping and includes spare parts and labor.

Type:	TK-105 CKULT
Serial number:	
Date of shipping:	
Signature/stamp:	

Manufacturer:

Kambic d.o.o.

Metliska cesta 16

8333 Semic

Slovenia

T +386 7 35 65 220

F +386 7 35 65 232

E info@kambicmetrology.com

W www.kambicmetrology.com

Thank you for your trust and for buying this device. We hope it will successfully serve the purpose for many years.

**CAREFULLY READ THESE INSTRUCTIONS
BEFORE USING THE DEVICE**

SAMPLE



CONTENT

1. WARNINGS AND SAFETY PRECAUTIONS.....	4
2. INTRODUCTIONS	14
3. TECHNICAL DATA	16
4. USE PURPOSE AND SAFETY ELEMENTS	17
5. INSTRUCTIONS FOR USE.....	18
6. SETTINGS	11
6.1 PARAMETER SETTINGS - MANUAL.....	11
6.2 PARAMETER SETTINGS - AUTOMATIC.....	13
7. SPECIAL SETUP	26
7.1 TIME AND DATE	26
7.2 CORRECTION SETUP.....	27
7.3 CORRECTION SETUP SCHEME	28
7.4 USERS PASSWORDS	31
7.5 PROGRAM COPY.....	32
8. CONTROL PANEL DESCRIPTION	33
9 SERVICE AND MAINTENANCE	34
10. REQUIRED SPACE AND CONECTIONS.....	35
11. DISMANTLING AND DISPOSAL	36
12. TROUBLESHOOTING	37
12.1. OVER TEMPERATURE SHUT-OFF	37
13. ATTACHMENTS	38
13.1. WIRING DIAGRAM	
13.2. RS 232 COMMUNICATION PROTOCOL	
13.3 DECLARATIONS	

EN

1. WARNINGS AND SAFETY PRECAUTIONS

Always keep this manual in close reach for reference. This product should only be used and operated by skilled and trained personnel familiar with technical capabilities and potential safety hazards.

Always follow and obey the national regulations related to technology and labor laws.

To avoid injuries and equipment damage study and follow the safety instructions and warnings.

Legal:

The content of the manual is subject to change without notice.

Understanding and following this operating manual is first step to hazard-free and safe use of the equipment.

This user manual can not reach out to all application that might even develop in the future. If you find information unclear or you are not sure about safe use of the product in your specific case, do not hesitate to contact your dealer or us via info@kambic.com for further information or opinions.

In no event shall Kambic d.o.o. be held liable for any damages, direct or incidental related to the use of this product and manual.

Product can be equipped with variety of accessories and options. This warning list might include elements that are applicable only with certain models and accessories.



READ ALL INSTRUCTIONS BEFORE USE!

Reduce the possibility of injury and failure.



WARNING

Before you perform any kind of maintenance, disconnect all electrical power to the unit! DO NOT operate this unite without a properly grounded, properly polarized power cord. DO NOT connect this unite to a non-grounded, non-polarized outlet.



DANGER

Appliance must not be installed in a room where the possibility of explosive atmosphere is present!



DANGER OF BREAKDOWN

Service only allowed to authorized personnel!



DANGER OF FIRE

Heating of flammable materials is not allowed!



WARNING

Use only distilled or demineralized water for humidity maintenance system!
Close the doors tightly before start! Do not open doors during the cycle!



DANGER OF BURNS

Use safety gloves when operating with high/low temperatures!



EXPLOSION HAZARD

Do not process any materials that could generate explosive hazardous Atmosphere!



EXPLOSION HAZARD

Do not operate the equipment in explosive hazardous atmosphere!



ELECTRIC HAZARD

Do not operate the equipment in wet and condensing environment!



STABILITY HAZARD

Do not load or affect product stability with heavy loads or climbing the product!



TRANSPORT HAZARD

Transport the chamber only in original packing!
Always secure the chamber stability during reposition!
Never use doors or handles or accessories for holding point during reposition!



FREEZING HAZARD

Do not store or transport product if charged with water!
All water needs to be drained and dried from system elements prior to exposing to freezing conditions!



OVERHEATING HAZARD

Do not install the equipment in non ventilated environments!
Ensure appropriate space and volume around the chamber!
Ensure sufficient heat dissipation for product cooling!

DE

WARNUNGEN UND SICHERHEITSVORKEHRUNGEN

Halten Sie dieses Handbuch zum Nachschlagen stets griffbereit. Dieses Produkt darf nur durch befähigtes und trainiertes Personal verwendet werden, das mit den technischen Eigenschaften und potentiellen Sicherheitsrisiken vertraut ist.

Befolgen Sie stets die nationalen technischen und Arbeitsrechtsvorschriften.

Um Verletzungen sowie Schäden am Gerät zu vermeiden, lesen und befolgen Sie die Sicherheitsanweisungen und Warnungen.

Rechtliche Hinweise:

Der Inhalt dieses Handbuchs kann ohne vorherige Benachrichtigung geändert werden.

Das Benutzerhandbuch zu verstehen und zu befolgen, ist der erste Schritt zur gefahrenfreien und sicheren Verwendung dieses Geräts.

Dieses Benutzerhandbuch kann nicht alle Geräte, einschließlich zukünftiger Entwicklungen abdecken. Wenn Sie Informationen als unklar empfinden oder sich über die sichere Verwendung des Gerätes in Ihrem spezifischen Fall unsicher sind, zögern Sie nicht, Ihren Händler oder uns über info@kambic.com zu weiteren Informationen oder Stellungnahmen zu kontaktieren.

Keinesfalls kann Kambic d.o.o. für Schäden jeglicher Art durch Verwendung dieses Produktes oder Handbuchs, direkt oder indirekt, verantwortlich gemacht werden.

Das Produkt kann mit verschiedenen Zubehörteilen und Optionen ausgestattet sein. Die Warnungsliste kann Punkte enthalten, die nur auf bestimmte Modelle und Zubehörteile zutreffend sind.



LESEN SIE VOR DER VERWENDUNG ALLE ANWEISUNGEN!

Reduzieren Sie die Verletzungs- und Schadensmöglichkeiten.



WARNUNG

Vor jeglichen Wartungsarbeiten alle Netzversorgungsanschlüsse zum Gerät trennen! Das Gerät NICHT ohne ordnungsgemäß geerdetes und gepoltes Netzanschlusskabel verwenden. Das Gerät NICHT an eine Steckdose ohne Erdung oder mit falscher Polung anschließen.



GEFAHR

Das Gerät darf nicht in Räumen mit möglicherweise auftretender explosionsfähiger Atmosphäre betrieben werden!



GEFAHR DES GERÄTEAUSFALLS

Wartung nur durch autorisiertes Personal zulässig!



BRANDGEFAHR

Beheizung von entzündlichen Materialien ist nicht zulässig!



WARNUNG

Nur destilliertes oder entionisiertes Wasser für die Luftfeuchtigkeitsregelung verwenden! Türen vor dem Start dicht schließen und im Betrieb nicht öffnen!



GEFAHR VON VERBRENNUNGEN

Verwenden Sie bei hohen/niedrigen Temperaturen Sicherheitshandschuhe!



EXPLOSIONSGEFAHR

Verwenden Sie keine Materialien, die eine explosionsfähige Atmosphäre erzeugen könnten!



EXPLOSIONSGEFAHR

Das Gerät nicht in explosionsfähiger Atmosphäre betreiben!



GEFAHR ELEKTRISCHER SCHLÄGE

Das Gerät nicht in feuchter oder kondensierender Umgebung betreiben!



GEFAHR DER SCHWERPUNKTVERLAGERUNG

Keine schweren Lasten laden oder Stabilität durch Zuladung oder Besteigen des Produktes beeinflussen!



GEFAHR DURCH TRANSPORT

Transportieren Sie die Kammer nur in der Originalverpackung!
Bei Positionsveränderung stets die Kammerstabilität absichern!
Niemals Türen, Griffe oder Zubehörteile zum Tragen des Gerätes nutzen!



FROSTGEFAHR

Nicht einlagern oder transportieren, wenn Wasser im Produkt ist!
Vor Exposition gegenüber Temperaturen unter dem Gefrierpunkt muss das gesamte Wasser abgelassen und das ganze System trocken sein!



GEFAHR DER ÜBERHITZUNG

Das Gerät nicht in unbelüfteter Umgebung installieren!
Stellen Sie genug Abstand und Raumvolumen um die Kammer sicher!
Stellen Sie ausreichend Wärmeabfuhr zur Kühlung des Produktes sicher!

FR

MISES EN GARDE ET MESURES DE SÉCURITÉ

Veillez toujours garder ce manuel à proximité en cas de besoin. Ce produit ne doit être utilisé et manié que par du personnel formé et compétent étant au fait des capacités techniques et des risques potentiels d'accident.

Veillez toujours suivre et respecter les réglementations nationales en matière de technologie et de code du travail.

Afin d'éviter tout dommage corporel et matériel, veuillez étudier et suivre ces consignes de sécurité et mises en garde.

Clause légale:

Le contenu de ce manuel est sujet à modifications sans préavis.

La compréhension et le respect de ce manuel d'utilisation est le premier pas vers une utilisation sûre et sans danger de l'équipement.

Ce manuel d'utilisation ne peut s'étendre à l'ensemble des applications susceptibles de se développer à l'avenir. Si vous trouvez certaines informations peu claires ou si vous avez des doutes concernant une utilisation sûre dans votre cas précis, n'hésitez pas à contacter votre vendeur ou nous-mêmes via info@kambic.com pour plus d'informations ou de conseils.

En aucun cas Kambic d.o.o. ne pourra être tenu responsable pour quelques dommages directs ou accidentels que ce soient liés à l'utilisation de ce produit ou de ce manuel.

Le produit peut être équipé de nombreux accessoires et options. Cette liste de mises en garde est susceptible de contenir des éléments n'étant applicables qu'à certains modèles et accessoires.



LISEZ TOUTES LES CONSIGNES AVANT UTILISATION!

Limitez le risque d'accidents et de pannes.



ATTENTION

Déconnectez toute alimentation électrique de l'appareil avant de réaliser quelque type de maintenance que ce soit!

N'utilisez PAS cet appareil sans câble électrique correctement relié à la terre et correctement polarisé. Ne connectez PAS cet appareil à une prise non reliée à la terre ou non polarisée.



DANGER

L'appareil ne doit pas être installé dans une pièce présentant un risque d'atmosphère explosive!



RISQUE DE PANNE

Utilisation uniquement autorisée au personnel habilité! ,

**RISQUE D'INCENDIE**

Interdiction de chauffer des matériaux inflammables!

**ATTENTION**

N'utiliser que de l'eau distillée ou déminéralisée pour le système de maintien d'humidité ! Fermez les portes fermement avant de démarrer ! N'ouvrez pas les portes pendant le cycle!

**RISQUE DE BRÛLURES**

Portez des gants de sécurité lors d'une utilisation à hautes/basses températures!

**RISQUE D'EXPLOSION**

N'utilisez aucuns matériaux pouvant générer une atmosphère présentant des risques d'explosion!

**RISQUE D'EXPLOSION**

N'utilisez pas l'équipement dans une atmosphère présentant des risques d'explosion!

**RISQUE D'ÉLECTROCUTION**

N'utilisez pas l'équipement dans un environnement humide et présentant de la condensation!

**RISQUE D'INSTABILITÉ**

N'affectez pas la stabilité du produit avec de lourdes charges ou en montant sur celui-ci!

**RISQUES LIÉS AU TRANSPORT**

Ne transportez la chambre que dans son emballage d'origine!
Assurez toujours la stabilité de la chambre pendant son déplacement!
N'utilisez jamais de portes, de poignées ou d'accessoires comme point d'appui pendant un déplacement!

**RISQUE DE GEL**

N'entreposez ou ne transportez pas le produit si celui-ci est chargé d'eau!
Toute eau doit être évacuée des composants du système et ces derniers séchés avant d'être exposés à des conditions de gel!

**RISQUE DE SURCHAUFFE**

N'installez pas l'équipement dans un environnement non ventilé!
Assurez suffisamment d'espace et de volume autour de la chambre!
Assurez suffisamment de dissipation thermique pour le refroidissement du produit!

ADVERTENCIAS Y PRECAUCIONES DE SEGURIDAD

Mantenga siempre este manual al alcance de la mano para su posterior consulta. Sólo el personal cualificado y capacitado que conoce capacidades técnicas y posibles riesgos de seguridad debe usar y manipular este producto.

Observe y cumpla siempre con las reglamentaciones nacionales relativas a la tecnología, igual que con la legislación laboral.

Para evitar heridas y daños en el equipo, revise y siga las instrucciones y advertencias de seguridad.

Aviso legal:

El contenido de este manual está sujeto a cambio sin previo aviso.

Entender y seguir las instrucciones de este manual de funcionamiento es el primer paso para el uso del equipo sin riesgos y de una manera segura.

Este manual de usuario no puede cubrir todas las aplicaciones que puedan desarrollarse en el futuro. Si considera que alguna información no está clara o tiene dudas en cuanto al uso seguro del producto en su caso particular, contacte con su distribuidor o escríbanos a info@kambic.com para obtener información adicional u opinión.

Sociedad limitada Kambic d.o.o. en ningún caso será responsable de ningún tipo de daños directos o incidentales resultantes de la utilización de este producto y manual.

El producto puede ser provisto de una variedad de accesorios y opciones. Esta lista de advertencias puede incluir elementos aplicables sólo a algunos modelos y accesorios.



¡LEA TODAS LAS INSTRUCCIONES ANTES DE USAR EL PRODUCTO!

Reduzca la posibilidad de heridas y averías.



ADVERTENCIA

Antes de cualquier mantenimiento, idesconecta todo el suministro eléctrico de la unidad! NO manipule esta unidad sin un cable de alimentación debidamente polarizado y puesto a tierra. NO conecte esta unidad con un enchufe no polarizado y sin puesta a tierra!



PELIGRO!

¡El Aparato no se debe instalar en el lugar en el que existe la posibilidad de presencia de atmósfera explosiva!



PELIGRO DE FALLO

Uso permitido sólo para el personal autorizado!



PELIGRO DE INCENDIO

Mantener alejado de fuentes de calor, chispas, llama abierta o superficies calientes!
No fumar!



ADVERTENCIA

¡Utilice sólo agua destilada o desmineralizada para el sistema de enjuague de la humedad!
¡Cierre la puerta ajustadamente antes de comenzar! ¡Durante el ciclo no abra la puerta!



PELIGRO DE QUEMADURAS

¡Al manipular el producto en temperaturas altas o bajas, utilice los guantes protectores!



RIESGO DE EXPLOSIÓN

¡No procese ningún material que pueda generar una atmósfera explosiva peligrosa!



RIESGO DE EXPLOSIÓN

¡No manipule el equipo en una atmósfera explosiva peligrosa!



RIESGOS ELÉCTRICOS

¡No manipule el equipo en un ambiente húmedo y de condensación!



RIESGO DE INESTABILIDAD

¡No aplique carga ni desestabilice el producto con cargas pesadas!
¡No subir al producto!



RIESGOS AL TRANSPORTAR

¡Transporte la cámara sólo en su empaque original!
¡Proporcione siempre estabilidad a la cámara al reposicionarla!
¡Nunca la agarre por las puertas, asideros o accesorios durante el reposicionamiento!



RIESGO DE CONGELAMIENTO

¡No almacene ni transporte el producto si está lleno de agua!
¡Antes de exponer el producto a las condiciones de congelamiento hay que eliminar y secar el agua por completo de los elementos del sistema!



RIESGO DE SOBRECALENTAMIENTO

¡No instale al equipo en los ambientes sin ventilación!
¡Proporcione suficiente espacio y volumen alrededor de la cámara!
¡Proporcione la disipación del calor suficiente para enfriar el producto!

ПРЕДУПРЕЖДЕНИЯ И МЕРЫ ПРЕДОСТОРОЖНОСТИ

Всегда держите данное руководство в непосредственной близости для справки. Данное изделие должно использоваться и эксплуатироваться только квалифицированным и подготовленным персоналом, ознакомленным с техническими возможностями и потенциальными угрозами безопасности.

Всегда последовательно соблюдайте национальные правила, касающиеся технологий и трудового законодательства. Во избежание травм и повреждений оборудования изучите и следуйте инструкциям по технике безопасности и предупреждениям.

Правовая информация:

Содержание данного руководства может быть изменено без предварительного уведомления.

Понимание и следование данной инструкции по эксплуатации является первым шагом на пути к безопасности и безопасному использованию оборудования.

Данная инструкция по эксплуатации не может охватить все приложения, которые могут развиваться в будущем.

Если информация для вас является неясной или вы не уверены в безопасном использовании изделия в вашем конкретном случае, рекомендуем обращаться к вашему дилеру или к нам через info@kambic.com за дополнительной информацией или мнением. Ни при каких обстоятельствах Kambic d.o.o. не несет ответственности за любые повреждения, прямо или косвенно связанные с использованием данного изделия и руководства.

Изделие может быть оснащено разнообразными аксессуарами и опциями. Этот список предупреждений может включать элементы, которые применимы только к определенным моделям и аксессуарам.



ПРОЧИТАЙТЕ ВСЕ ИНСТРУКЦИИ ПЕРЕД ИСПОЛЬЗОВАНИЕМ!

Уменьшите вероятность травм и сбоев.



ПРЕДУПРЕЖДЕНИЕ!

Прежде чем выполнять какое-либо обслуживание, отключите все электропитание к устройству! НЕ используйте это устройство это устройство без правильно заземленного, правильно поляризованного шнура питания. НЕ подключайте это устройство к незаземленной, неполяризованной розетке.



ОПАСНОСТЬ

Прибор не должен устанавливаться в помещении, где присутствует взрывоопасная атмосфера!



ОПАСНОСТЬ ПОВРЕЖДЕНИЯ

Обслуживание разрешается только уполномоченному персоналу!

**ОПАСНОСТЬ ВОСПЛАМЕНЕНИЯ**

Нагревание воспламеняющихся материалов запрещено!

**ПРЕДУПРЕЖДЕНИЕ**

Используйте только дистиллированную или деминерализованную воду для системы поддержания влажности! Плотно закройте двери перед запуском! Не открывайте двери во время цикла!

**ОПАСНОСТЬ ОЖОГОВ**

При работе с высокими / низкими температурами используйте защитные перчатки!

**ОПАСНОСТЬ ВЗРЫВА!**

Не обрабатывайте любые материалы, которые могут создавать взрывоопасную атмосферу!

**ОПАСНОСТЬ ВЗРЫВА!**

Не используйте оборудование во взрывоопасной среде!

**ЭЛЕКТРИЧЕСКАЯ ОПАСНОСТЬ**

Не используйте оборудование во влажной и конденсационной среде!

**ОПАСНОСТЬ НЕСТАБИЛЬНОСТИ**

Не перегружайте и не влияйте на стабильность изделия тяжелыми нагрузками или подъемом на изделие!

**ТРАНСПОРТНАЯ БЕЗОПАСНОСТЬ**

Транспортируйте камеру только в оригинальной упаковке!
Всегда сохраняйте стабильность камеры во время перемещения!
Никогда не используйте двери или ручки или аксессуары для удерживания во время перемещения!

**ОПАСНОСТЬ ЗАМЕРЗАНИЯ**

Не храните и не перевозите изделие, если оно заполнено водой!
Вся вода должна быть слита и высушена из элементов системы до воздействия условий замерзания!

**ОПАСНОСТЬ ПЕРЕГРЕВА**

Не устанавливайте оборудование в невентилируемых помещениях!
Обеспечьте необходимое расстояние и пространство вокруг камеры!
Обеспечьте достаточную теплоотдачу для охлаждения изделия!

2. INTRODUCTIONS

Appliance description

Temperature chambers indicated with TK-... CKULT are designed and build for many testing purposes or sample storage at required temperature.

The interior chamber and inner side of the doors are made of high quality stainless steel material AISI 304 CrNi. Exterior housing is made of galvanized material coated with high quality varnish.

Removable shelves are made of stainless steel mesh and are electro polished.

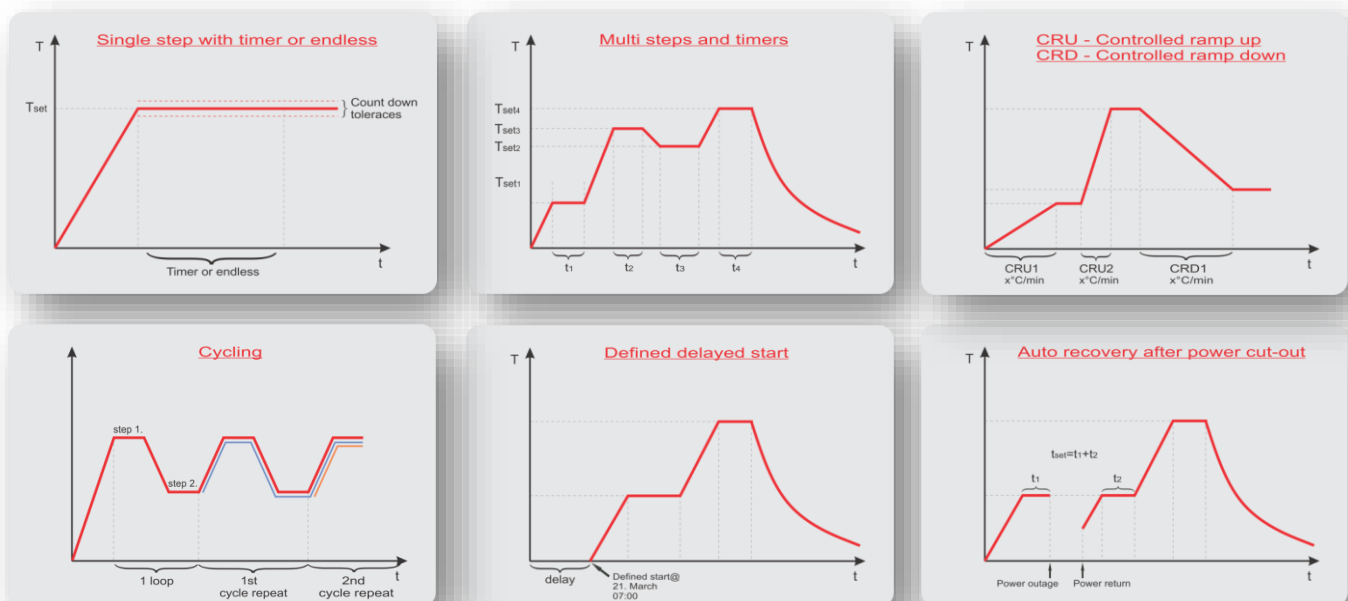
The double seal between the chamber and the door is made of high quality silicon.

Temperature control

Temperature Chamber is equipped with electric heaters for higher temperatures and cooling system for lower temperatures. Temperature is controlled via a central microprocessor with PID controller.

Controller

Temperature Chamber is equipped with microprocessor controller, which is specially designed for simulation of temperature conditions. Controller enables 50 different programs. Each of these 50 programs has ability to set 50 different temperature steps which can last from 1 to 1440 minutes or continuous operation.



Record process

Appliance has a built-in RS232 port that is used to communicate with a computer or a printer.

The printer is used when we require documented report of the process.

The record is performed by a standard dot printer A4, the frequency of the record can be set for each program within the time interval from 1min to 200 minutes.

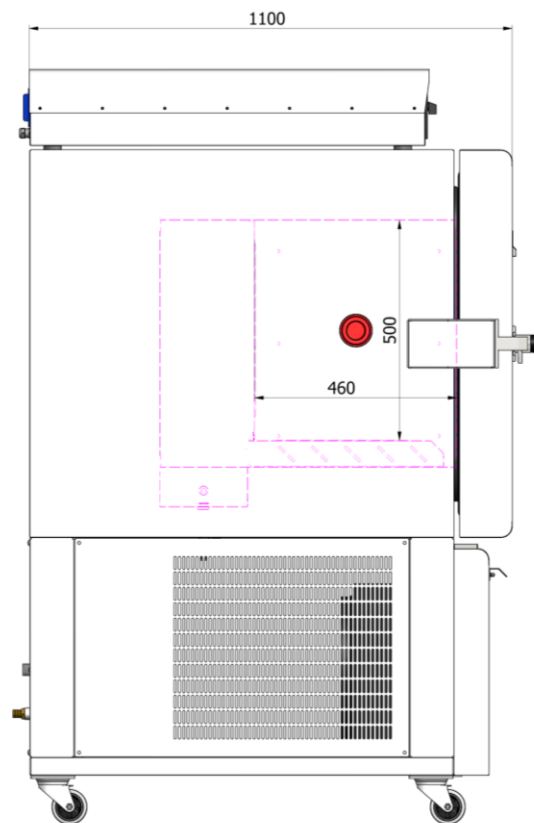
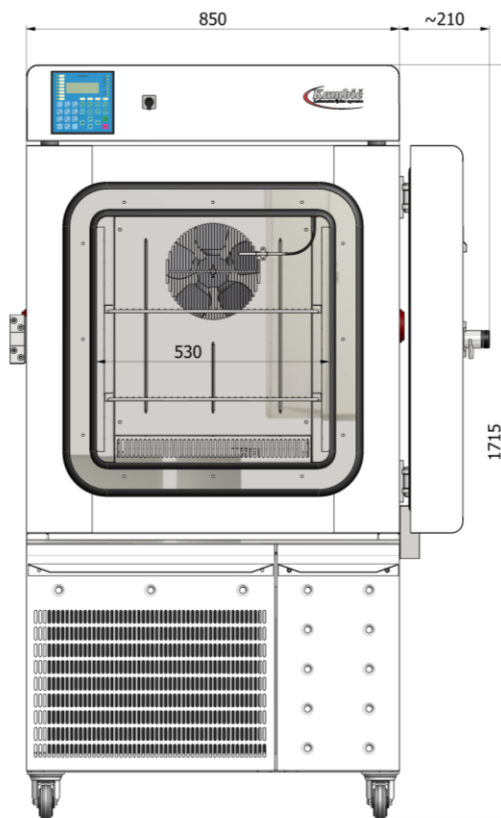
Calibration, validation

The basic calibration is performed by the manufacturer. If ordered the calibration report is delivered with the unit.

Calibration, validation can also be done by the user because the appliance has a special sub-program that allows easy settings and adjustments for temperature probes, without mechanical intervention on the device.

3. TECHNICAL DATA

	TK-105 CKULT
Interior dimensions	530 x 500 x 460 mm (W x H x D)
Exterior dimensions	850 x 1715 x 1100 mm (W x H x D)
Volume	105 L
Number of shelves	1/6
Temperature range	-75°C to +180°C
Temperature stability	± 0.1
Control	microprocessor controller DPC 420
Cooling	Air cooled compressor aggregate
Over temperature shut-off	build in
Doors	one wing- metal
Power supply	230 V / 50-60Hz / 4.5 kW
Communication port RS 232	Built-in
Temperature probe	PT 100



4. USE PURPOSE AND SAFETY ELEMENTS

Climatic chambers indicated with TK-... CKULT are designed and build for many testing purposes or sample storage at required temperature.

Given the wide scope of temperature regulation the appliance is useful in many areas as, pharmacy, electronics industry, testing.

It is not allowed to heat-up any material which could form explosive atmosphere.

Do not store any fluids on top of the housing!

The appliance may only be used in rooms where the possibility of explosive atmosphere is not present!

Operation with open doors can cause different errors or even break down. When opening the door keep in mind to shorten this sequence as much as possible.
If your action requires longer period of open doors, switch the unit off for this period.

Microprocessor controller has a special safety system which turns heaters off if temperature rises for more than 5 °C above set temperature.

In case of an error on this system, a mechanical over temperature shut-off will disable heating. If this happens the cause must be found and the over temperature shut-off must be manually reset. The over temperature shut-off device is located behind the rear plate of the lower housing and is manually reset by pressing the spring next to the thermostat setting shaft.

The appliance may only be used by trained personnel with enough practical experience regarding heating, cooling and conditioning..

Each user is responsible for correct and safe use.

The device does not cause noise greater than 80 dB.

When indicating error, press "START/STOP" and switch the main switch in the off position immediately. Contact service.

5. INSTRUCTIONS FOR USE

1. Connect the power cord into the power supply 230V / 50-60Hz.
3. Insert the material on the shelves and close the chamber doors.
4. Put the main switch in the position 1.
5. Select the desired program and press "**START/STOP**"
7. From this moment on the cycle runs completely automatically
8. Press "**START/STOP**" to stop the cycle
9. Use safety gloves to remove the material from the chamber

ATTENTION:

Safety gloves use is highly recommended when working with high/low temperatures!

Transport is usually carried in the original packaging. In case that the appliance has to be replaced, it must be manually placed on a transport palette and only then lifted and transported with a vehicle.

Installation must be done in a dry, well ventilated room.

Be sure that the seal is always clean and in superb condition!

Program selection and start

Turn on the main switch

Display:

T = 38.6°C


07:18:19

23-06-16

T = 38.6°C = current air temperature in chamber

07:18:19 = time

23-06-16 = date

Press  to enter main menu

If password protection is activ you must enter password:

ENTER PASSWORD AND
FINISH WITH ENTER
PASSWORD: 0****

Enter password (use numeric keyboard) and finish with enter.

ATTENTION:
See chapter 7.4 SPECIAL SETTINGS – USERS PASSWORDS


Display:

1 – START PROGRAM
2 – MANUAL
3 – PROGRAM SETUP
4 – SPECIAL SETUP

Press a number on a keyboard to enter in the selected sub-menu.



Press 

SELECT PROGRAM
TO START
NUMBERS: 1-50
SELECTED PROGRAM: 1

To choose between programs press on the number (below display) and press  .

When program was stopped by pressing stop button, you get notification on display

PROGRAM INTERRUPTED!
PRESS BUTTON
-> TO CONTINUE PROGR.
<- FROM BEGINNING

If you would like to continue program from the point where it was interrupted press 
Or if you would like to start from beginning press 

After few seconds

STEP Nr: 1 : 30:00
Tc= 38.3°C / 40°C


Meaning:

STEP Nr: 1: 30:00	First step in the process. Time set to 30 minutes [when temperature and Rh reaches the tolerance area the time count down starts. See special settings]
Tc=38.3°C / 40°C	Current chamber temperature is 38.3°C, set chamber temp. 40°C

ATTENTION:

This kind of display indicates automatic running of selected program. The machine will automatically turn off at the end of all temperature steps!

6. SETTINGS

Press  to enter main menu

Display:

1 – START PROGRAM
2 – MANUAL
3 – PROGRAM SETUP
4 – SPECIAL SETUP

If you press the number next to the written description you enter the described sub menu.

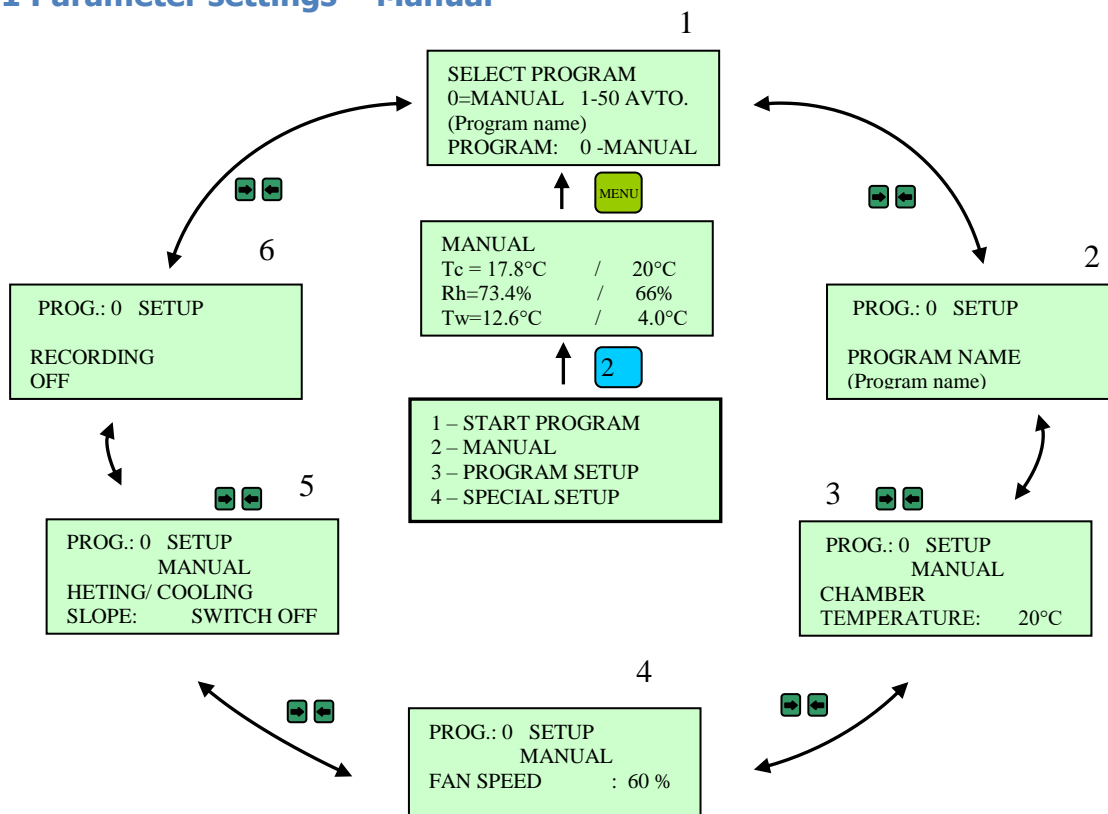
Press 

ATTENTION:

If you press 2 – MANUAL manual program starts immediately! Parameters for manual program can be set while working!

To move between parameters press   , to set value press  .

6.1 Parameter settings – Manual



1. Select program

- Select desired program to set settings. Program 0 is reserved for manual program

2. Program name

- Enter program name (the selected program can be named)

3. Chamber temperature

- Set desired chamber temperature (temperature range is limited by producer)

4. Fan speed

- You can set the desired chamber air circulation fan speed (from 30% to 100%)

5. Cooling / Heating speed

- You can set how fast the temperature in the chamber changes (°C/min)

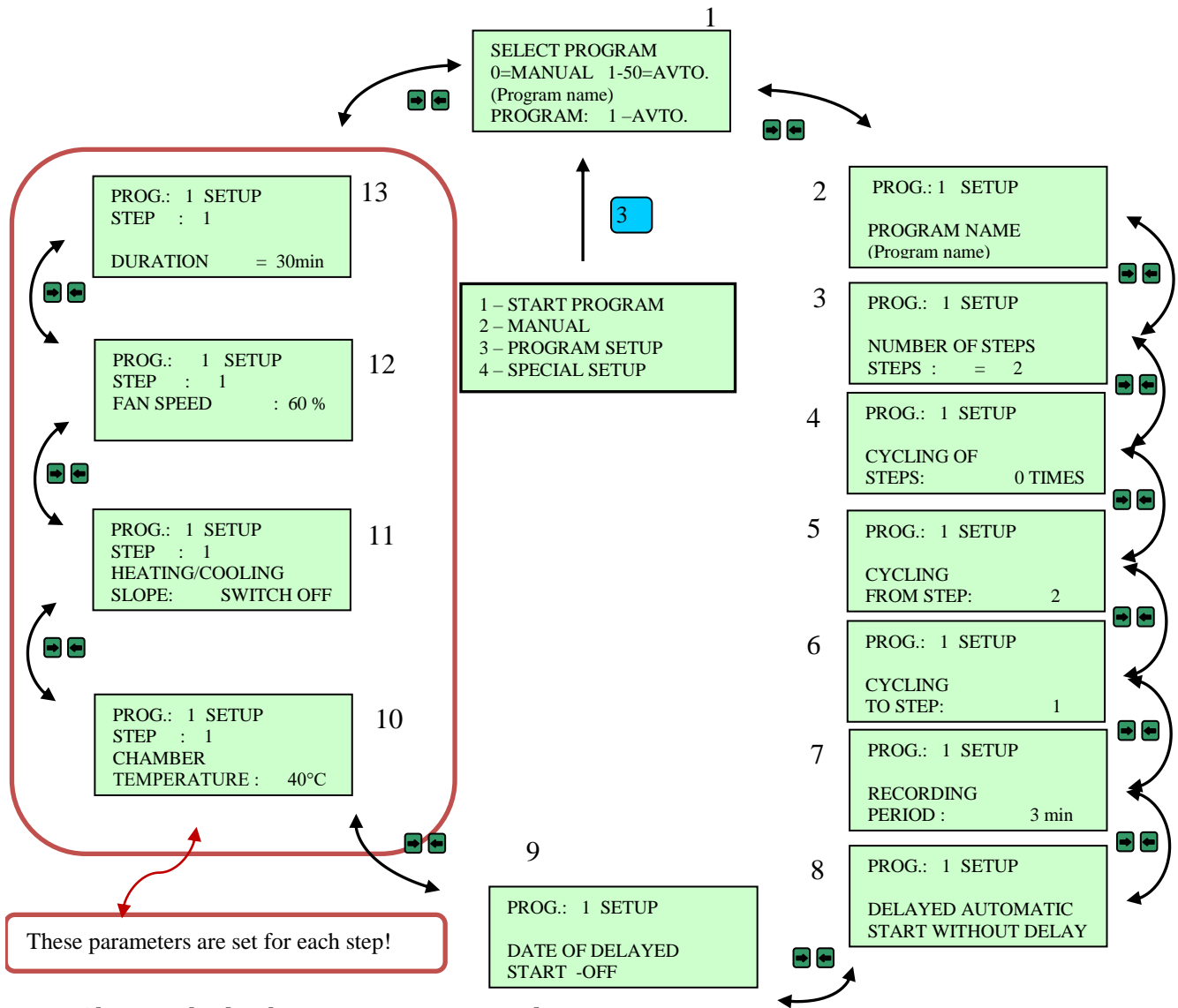
6. Recording period

- Recording interval can be set from 1 in 200 minutes or switched off

ATTENTION:

If you set value lower than 1 minute recording is set to OFF!

6.2 Parameter settings – AVTOMATIC PROGRAM



1. Choose desired program to set settings:

- choose program from 1-50

To change program number press .

2. Program name

- Enter program name (the selected program can be named)

3. Number of steps:

- Choose the required number of temperature, humidity and time steps. Maximum number of different steps is 50.

To change value press .

4. Cycling of steps

- Choose how many times should the selected program sequences to be repeated.

5. Cycle from step

6. Cycle to step

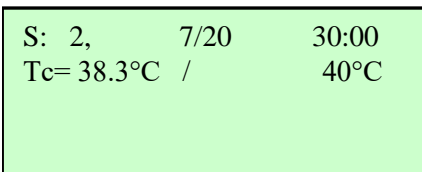
- With these two settings you select the program sequence that will be repeated.

For example: you have "number of steps" set to 4, and you would like to repeat/cycle all steps from 1 to 4. In this case you have to set the "cycle from step" to 4, and "cycle to step" to 1. This way when the program is finished with step no. 4 it returns to step no. 1 and repeats the process. The process will be repeated for so many times as you have set in the "cycling of step" setting.

ATTENTION:

"Cycling from step" number must always be bigger than "Cycling to step" number!

When you are using cycling options the main display will show:



Meaning:

S: 2 this number will indicate which step ("number of steps" setting) of the program is currently under execution.

7/20 20 – number off all steps that need to be executed, 7 – current step in process.

Example: "number of steps" is set to 5, cycling of steps is set to 3, "cycle from step" is 5, "cycle to step" is set to 1. So the program shall do 5 steps and then repeat them for 3 times (5 + 3 x 5 = 20). together we have 20 steps to execute. Currently is in step 7.

30:00 Countdown timer for the current step (step "duration time" setting).

Tc=38.3°C / 40°C Current chamber temperature is 38.3°C, set chamber temp. 40°C

7. Recording period

- Here you can set the printing interval for printer. You can set the interval from 1 min to 200 min.

If printer is not connected to the machine printing should be switched off = 0 min!

To change value press   .

8. Delayed automatic start

- Controller has option to set automatic start at certain hour and date.



ATTENTION:
The hour of the delayed start should always be set in combination with date of delayed start!

9. Date of delayed start



- Here you can set the date of the delayed start. Delayed start should always be set in combination with time of delayed start.



ATTENTION:
The date of the delayed start should always be set in combination with time of delayed start!

10. Chamber temperature setting

- Set desired air chamber temperature for the first step (from -40°C to +180°C)

To change value press  .

11. Cooling / Heating speed

- You can set how fast the temperature in the chamber changes (°C/min)

12. Fan speed


- You can set the desired chamber air circulation fan speed

13. Duration time

- Set desired duration time for step 1. in time range from 1 min to 1440 min.
- Duration time can also be set endless (under 1 min or above 1440 min)

ATTENTION:
The countdown will start when only when temperature and humidity are within allowed limits from set values!

If you selected more than 1 step, then parameters for other steps must be set the same way as for the first step.

When you finish with settings return to main menu by pressing .


7. SPECIAL SETUP

7.1 SPECIAL SETTINGS – TIME AND DATE SETTINGS

Press  to enter main menu

Display:

```
1 – START PROGRAM
2 – MANUAL
3 – PROGRAM SETUP
4 – SPECIAL SETUP
```

Press number  to enter special setup menu

Display

```
1 – TIME SETUP
2 – CORRECTION SETUP
3 – USERS PASSWORDS
4 – PROGRAM COPY
```

Press number  to enter sub menu time setup


Display

```
SETUP
TIME AND DATE
TIME   :      06:58:12
DATE   :      16-09-12
```

To change value under blinking line press   , to move blinking line press   .

To save and exit setting press  .

7.2 CORRECTION SETUP

To enter this menu press  button.


Display:

1 – START PROGRAM
2 – MANUAL
3 – PROGRAM SETUP
4 – SPECIAL SETUP

Press  to enter special setup menu

Display:

1 – TIME SETUP
2 – CORRECTION SETUP
3 – USERS PASSWORDS
4 – PROGRAM COPY

Press  to enter correction setup menu

To enter correction setup during program in operation hold  for app. 10s.!

If password protection is activ you must enter password:

ENTER PASSWORD AND
FINISH WITH ENTER

PASSWORD: 0*****

Enter password (use numeric keyboard) and finish with enter.

ATTENTION:

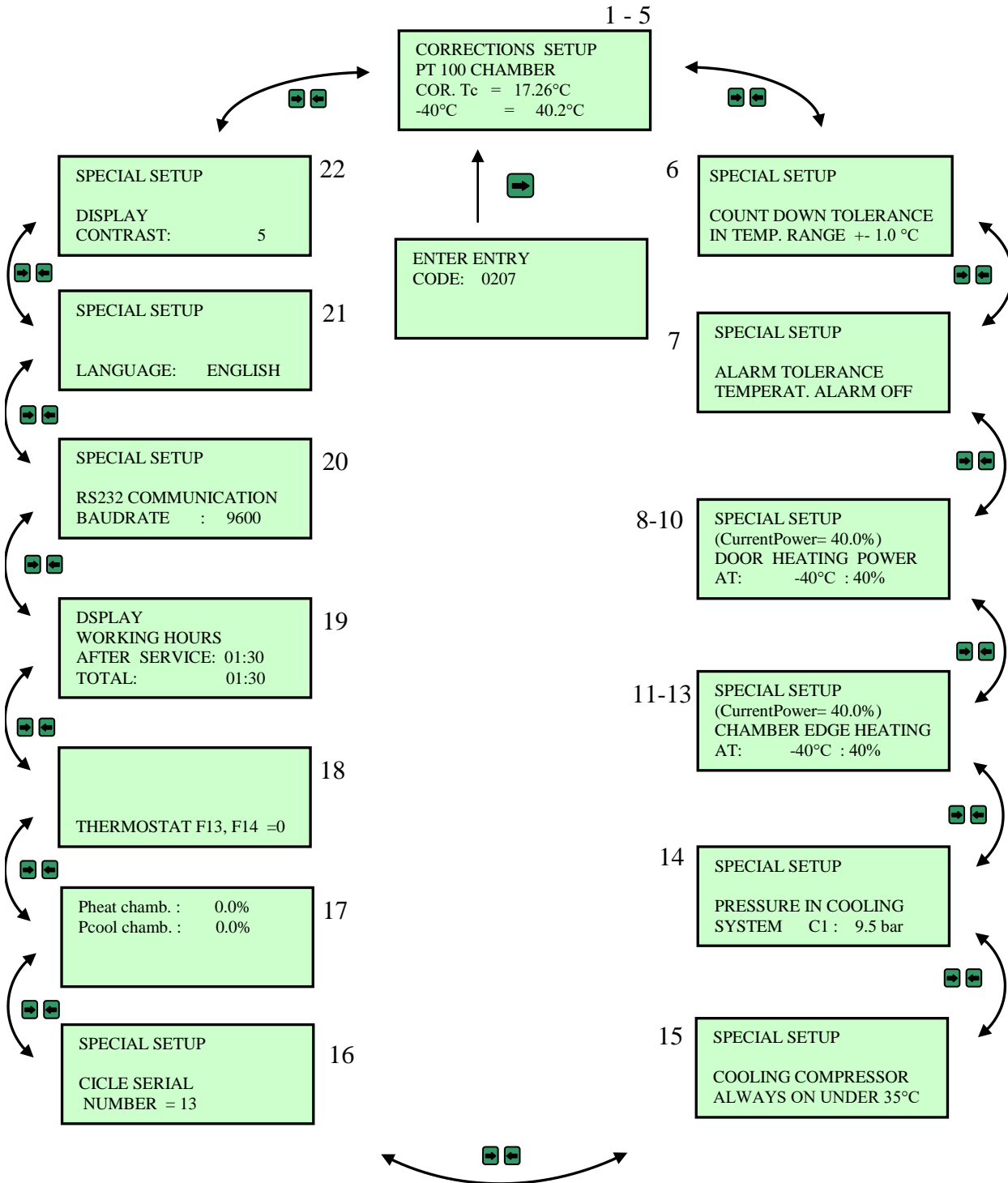
See chapter 7.4 SPECIAL SETTINGS – USERS PASSWORDS

ATTENTION:

Special settings should only be changed by the authorized personal on the basis of relevant measurements or other proofs!



Corrections are allowed to be changed only on credible measures basis, by personnel with suitably equipment and knowledge to perform calibration.

7.3 Correction Setup Scheme



1-5: Temperature probe correction

- For temperature probe 5 corrections points are defined.

For each correction point correction can be set. To change value use   .

6: Time count-down tolerance (temperature)

- You can set the time of each temperature step. The countdown will start when temperature is in set limits.

For example:

Set temperature: 50°C

Set time: 60 min

Set START TIME COUNT IN RANGE : +- 1°C

The countdown will start when the temperature will be between 49.0°C and 51.0°C !

ATTENTION:

Time count-down begins when both parameters are in their limits!

7: Temperature tolerance alarm

- Alarm (acoustic and visual) can be set to report when temperature is not within the set tolerance. Temperature tolerance can be set from +/-4°C or higher.

8-13: Heating power

- To avoid water condensation on the doors a weak heater is installed on inner side of doors and on chamber edge. In case of inconvenient condensation at some temperatures you may higher/lower this value.

14: Pressure in cooling system

- Information valid only for service personnel!

15: Cooling compressor always ON under

- Set the temperature under which the compressor will be always on

16: Cycle serial number

- Information valid only for service personal!

17, 18, 19: Information valid only for service personal!


20: Communication port setup

21: Selection of menu language

- English
- Slovensko

22: Display contrast setup

7.4 SPECIAL SETTINGS – USERS PASSWORDS

To enter this menu press  button.

Display:

```

1 – START PROGRAM
2 – MANUAL
3 – PROGRAM SETUP
4 – SPECIAL SETUP
    
```

Press  to enter special setup menu

Display:

```

1 – TIME SETUP
2 – CORRECTION SETUP
3 – USERS PASSWORDS
4 – PROGRAM COPY
    
```

Press  to enter users passwords setup menu

WARNING:
Changing passwords is enabled only with the administrator password login!

OPERATOR PASSWORD SETUP:

```

PASSWORDS SETUP
1 – OPERATOR
PASSWORD :      1***
NAME : 1
    
```

```

PASSWORDS SETUP
2 – OPERATOR
PASSWORD :      2***
NAME : 2
    
```

We have passwords for two operators.

Operator password allows us to access the selection of pre-set program, run the program and stop the program.

TECHNICIAN PASSWORD SETUP:

```

PASSWORDS SETUP
3 – TECHNICIAN
PASSWORD :      3***
NAME : 3
    
```

```

PASSWORDS SETUP
4 – TECHNICIAN
PASSWORD :      4***
NAME : 4
    
```

We have passwords for two technicians.

Technician password allows us to access all operator functions, settings of programs and special setup settings. The users passwords settings are not accessible and they are not allowed to change.

ADMINISTRATOR PASSWORD SETUP:


```
PASSWORDS SETUP
5 - ADMINISTRATOR
PASSWORD :      5***
NAME : 5
```

We have one administrator password. The administrator password allows us to access and modify all settings.

WARNING:


If the administrator password is set to 0000, are all passwords turned off!

7.5 SPECIAL SETTINGS – PROGRAM COPY

To enter this menu press  button.

Display:

```
1 - START PROGRAM
2 - MANUAL
3 - PROGRAM SETUP
4 - SPECIAL SETUP
```

Press  to enter special setup menu

Display:

```
1 - TIME SETUP
2 - CORRECTION SETUP
3 - USERS PASSWORDS
4 - PROGRAM COPY
```

Press  to enter program copy setup menu

Display:

```
PROGRAM COPY      :
DATA FROM PROG.  : 1
COPY TO PROGRAM  : 2
CONFIRM COPY=F1 3sec
```

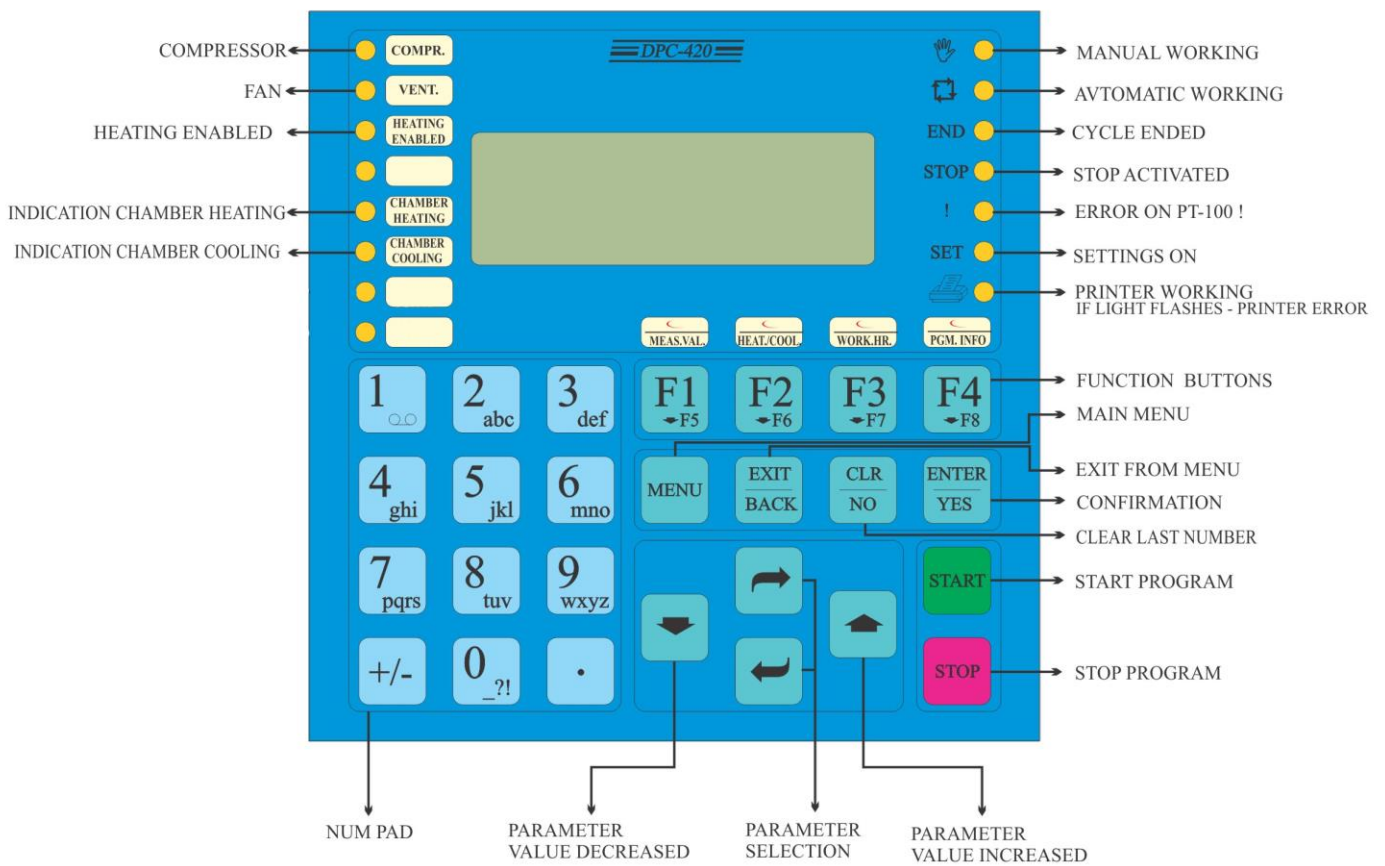
DATA FROM PROG. : 1
COPY TO PROGRAM : 2

Data from selected program (number 1) will be copied to selected program (number 2).

To move between parameters press  , to set value press   .

To confirm copy press  button for 3 seconds.

8. CONTROL PANEL DESCRIPTION



9. SERVICE AND MAINTENANCE



WARNING

Before any service or cleaning be sure to disconnect the power supply cable from the power supply!

Maintenance and service within the warranty period may only be done by the producer's service department or authorized service.

Please advise Kambic d.o.o. before alternation & modification. It is not allowed to change or rebuild any part of the construction without producer's written permit.

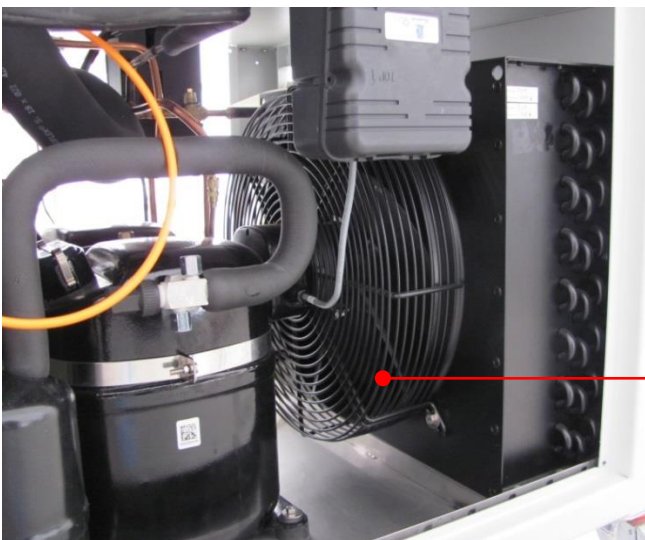
All spare parts are in stock in the producer's magazine. It is only allowed to use the original spare parts.

With proper care the instrument should require very little maintenance. Keep the interior and the exterior clean. For cleaning use some soft cleaning detergents and soft cloth.

Regularly check parts of cooling system.

At least once per six month check and clean:

- Condenser blades (for cleaning use compressed air. (Blow from behind))



Cooling system condenser
(to be cleaned with compressed air)

In the event of failure, call the service;

Please find contacts on page 1 or on our web site: www.kambicmetrology.com

10. REQUIRED SPACE AND CONNECTIONS

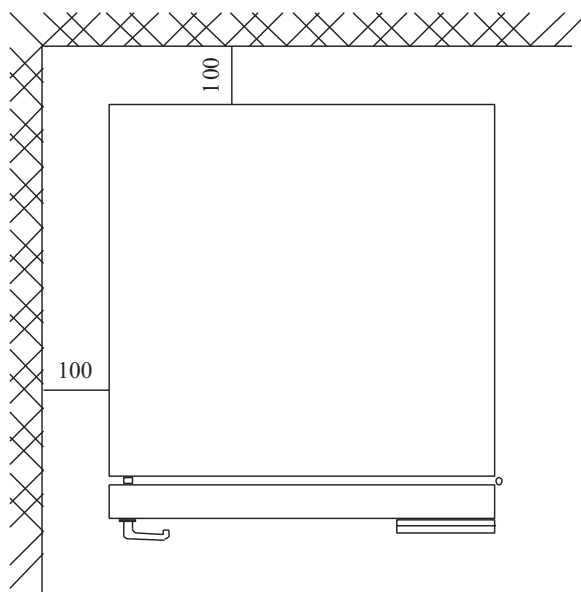
The appliance must be installed at least 100 mm away from the nearest wall. It must also be in a dry and well ventilated room.

Additional space or relocation of the apparatus may be necessary when carrying out any maintenance or servicing.

The user must provide electrical connection: 230V±10% / 50Hz.

Environmental and operational conditions

Temperature	+15°C ... +35°C
Relative humidity	from 15 % to 75 %



11. DISMANTLING AND DISPOSAL



This symbol means do not dispose of your product with your other household waste. Instead, you should protect human health and the environment by handing over your waste equipment to a designated collection point for the recycling of waste electrical and electronic equipment. For more information please contact your local waste disposal service. Be aware that cooling system is filled with refrigeration gas R-449A!

12. TROUBLESHOOTING

The controller can detect an error on the PT 100 temperature probe. If this happens the signal is displayed with the Led diode next to " ! "

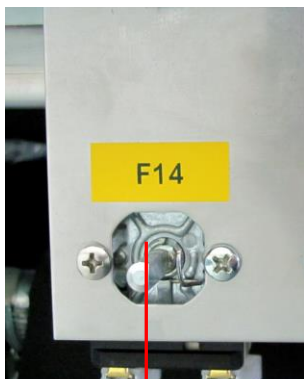
12.1 Over temperature shut-off

Microprocessor controller has a special safety system which turns heaters off if temperature rises for more than 5 °C above set temperature.

In case of an error on this system, a mechanical over temperature shut-off device will disable heating.

If this happens the cause of overheating must be found and the over temperature shut-off device must be manually reset.

The over temperature shut-off device is located behind the rear plate of the upper housing and is manually reset by pressing the spring next to the thermostat setting shaft (See picture).



Over temperature shut-off device (chamber heating)

All errors are also displayed in writing on controller display!

13. ATTACHMENTS

13.1 Wiring diagram

13.2 RS 232 Communication protocol

13.3 Declarations